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ABSTRACT

Method and apparatus for determining the flow rates and/or composition of a fluid comprising a multi-component mixture of a gas and at least one liquid in a pipe. Electromagnetic loss and phase measurements are performed in at least two directions of the pipe; the degree of annular flow is determined based on these measurements; the permittivity of the flow mixture is calculated, including corrections for the degree of annular flow; the mixture density is measured and compensated for the degree of annular flow; the temperature and pressure are obtained; the velocity of liquid and gas are determined, and based on the knowledge of densities and permittivities of the components of the fluid mixture, and the result from the above steps, the volume and mass flow rates of the gas and liquid(s) of the fluid mixture are calculated.